

## DomiLED

With the intense colors that seem to glow with energy and its significant brightness, DomiLED white LED is a highly reliable design device. Its dynamic nature makes it perfect choice for lighthing applications, office and home applications and standard industrial applications.



## Features:

- > High brightness surface mount LED.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 3.2 x 2.8 x 1.8mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to both IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q101.
- > Passed Corrosion Resistant Test.



## Applications:

- > Automotive:  
Interior application: eg: Switches, telematics, climate control system, dashboard.  
Exterior application: eg: Signal Lighting, Center High Mounted Stop Light (CHMSL), Fog lamp, Rear Combination Lights (RCLs).



**Optical Characteristics at Tj=25°C**

Part Ordering Number	Viewing Angle°	Luminous Intensity @ 20mA IV (mcd) <i>Appx. 1.1</i>		
		Min.	Typ.	Max.
DDZB-LJG-WX2-2J8L	120	1125.0	1800.0	2850.0
DDZB-LJG-V2X1-1R6T	120	900.0	1400.0	2240.0

**Electrical Characteristics at Tj=25°C**

Part Number	Vf @ If = 20 mA <i>Appx. 3.1</i>			Vr @ Ir = 10 µA <i>Appx. 6.1</i>
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
DDZB-LJG	2.8	3.2	3.6	5.0

**Absolute Maximum Ratings**

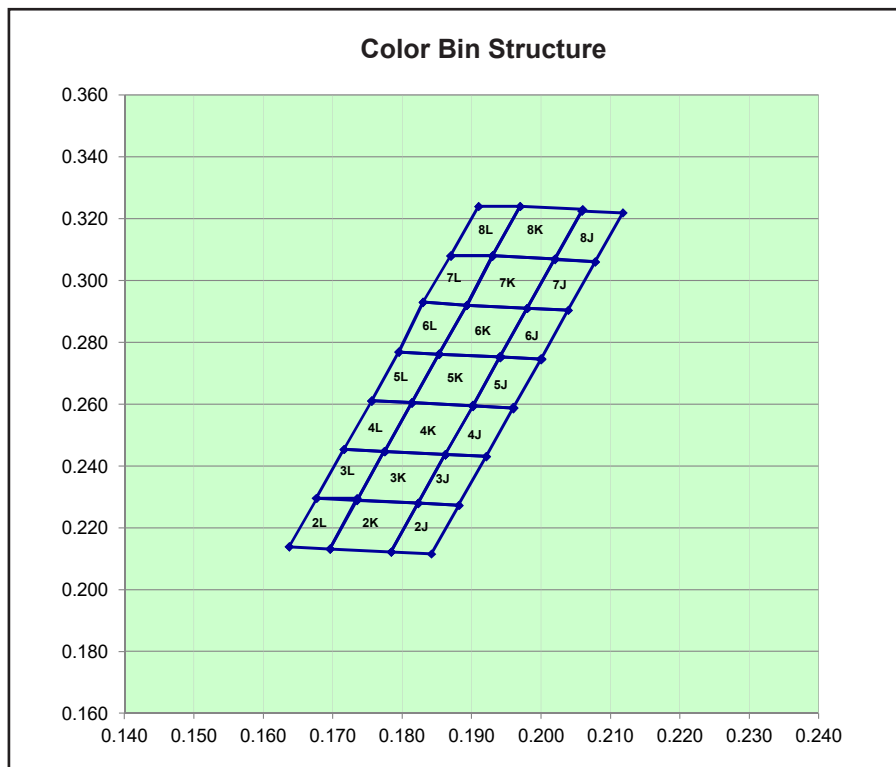
	Maximum Value	Unit
DC forward current	30	mA
Peak pulse current; (tp ≤ 10µs, Duty cycle = 0.005)	100	mA
Reverse voltage; Ir max = 10µA <i>Appx. 6.1</i>	5	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +100	°C
Storage temperature	-40 ... +100	°C
Power dissipation (at room temperature)	110	mW
Thermal resistance		
- Junction / ambient, Rth JA	340	K/W
- Junction / solder point, Rth JS	180	K/W
(Mounting on FR4 PCB, pad size >= 16 mm <sup>2</sup> per pad)		

**Characteristics**

	Symbol	Part Number	Value	Unit
Temperature coefficient of $V_F$ (typ) $I_F = 20\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_V$	DDZB-LJG	-3.08	mV / K
Temperature coefficient of $I_V$ (typ) $I_F = 20\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{IV}$	DDZB-LJG	-0.21	% / K
Temperature coefficient of $C_x$ (typ) $I_F = 20\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{Cx}$	DDZB-LJG	-0.00013	
Temperature coefficient of $C_y$ (typ) $I_F = 20\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{Cy}$	DDZB-LJG	-0.00041	

**Color Grouping** *Appx. 2.1*

For this color bin selection, part number will be DDZB-LJG-xxxx-2J8L

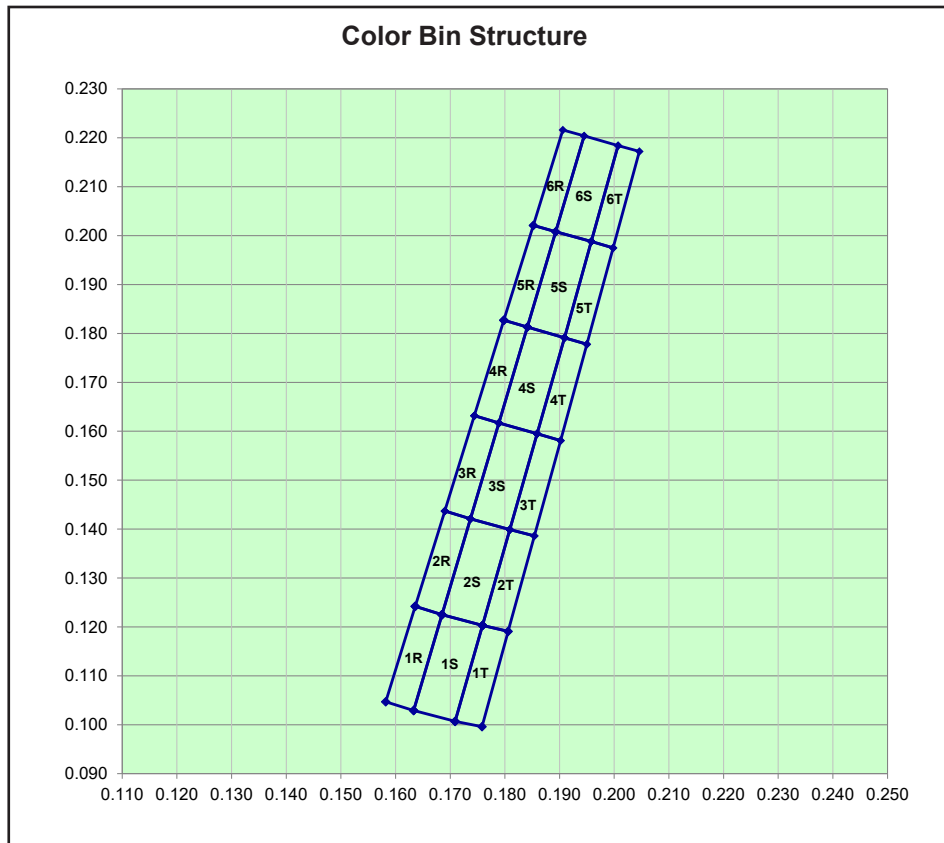


Bin		1	2	3	4
2J	Cx	0.1784	0.1842	0.1882	0.1823
	Cy	0.2122	0.2116	0.2273	0.2280
2K	Cx	0.1696	0.1784	0.1823	0.1735
	Cy	0.2132	0.2122	0.2280	0.2290
2L	Cx	0.1637	0.1696	0.1735	0.1677
	Cy	0.2139	0.2132	0.2296	0.2296
3J	Cx	0.1862	0.1823	0.1881	0.1921
	Cy	0.2437	0.2280	0.2273	0.2431
3K	Cx	0.1774	0.1735	0.1823	0.1862
	Cy	0.2447	0.2289	0.2280	0.2437
3L	Cx	0.1716	0.1676	0.1735	0.1774
	Cy	0.2454	0.2296	0.2289	0.2447
4J	Cx	0.1902	0.1862	0.1921	0.1960
	Cy	0.2595	0.2437	0.2431	0.2588
4K	Cx	0.1814	0.1775	0.1862	0.1902
	Cy	0.2605	0.2447	0.2437	0.2595
4L	Cx	0.1756	0.1716	0.1775	0.1814
	Cy	0.2611	0.2454	0.2447	0.2605
5J	Cx	0.1941	0.1902	0.1960	0.2000
	Cy	0.2753	0.2595	0.2588	0.2746
5K	Cx	0.1853	0.1814	0.1902	0.1941
	Cy	0.2762	0.2605	0.2595	0.2753
5L	Cx	0.1795	0.1756	0.1814	0.1853
	Cy	0.2769	0.2611	0.2605	0.2762

Bin		1	2	3	4
6J	Cx	0.1980	0.1941	0.2000	0.2039
	Cy	0.2910	0.2753	0.2746	0.2904
6K	Cx	0.1893	0.1853	0.1941	0.1980
	Cy	0.2920	0.2762	0.2753	0.2910
6L	Cx	0.1830	0.1795	0.1853	0.1893
	Cy	0.2930	0.2769	0.2762	0.2920
7J	Cx	0.2020	0.1980	0.2039	0.2078
	Cy	0.3070	0.2910	0.2904	0.3060
7K	Cx	0.1930	0.1893	0.1980	0.2020
	Cy	0.3080	0.2920	0.2910	0.3070
7L	Cx	0.1870	0.1830	0.1893	0.1930
	Cy	0.3080	0.2930	0.2920	0.3080
8J	Cx	0.2059	0.2020	0.2078	0.2118
	Cy	0.3225	0.3068	0.3061	0.3219
8K	Cx	0.1970	0.1930	0.2020	0.2060
	Cy	0.3240	0.3080	0.3070	0.3230
8L	Cx	0.1910	0.1870	0.1930	0.1970
	Cy	0.3240	0.3080	0.3080	0.3240

**Color Grouping** *Appx. 2.1*

For this color bin selection, part number will be DDZB-LJG-xxxx-1R6T



Bin		1	2	3	4
1R	Cx	0.1636	0.1685	0.1633	0.1582
	Cy	0.1242	0.1225	0.1029	0.1047
1S	Cx	0.1685	0.1759	0.1709	0.1633
	Cy	0.1225	0.1203	0.1007	0.1029
1T	Cx	0.1759	0.1806	0.1758	0.1709
	Cy	0.1203	0.1191	0.0996	0.1007
2R	Cx	0.1690	0.1737	0.1685	0.1636
	Cy	0.1437	0.1421	0.1225	0.1242
2S	Cx	0.1737	0.1809	0.1759	0.1685
	Cy	0.1421	0.1399	0.1203	0.1225
2T	Cx	0.1809	0.1854	0.1806	0.1759
	Cy	0.1399	0.1386	0.1191	0.1203
3R	Cx	0.1744	0.1789	0.1737	0.1690
	Cy	0.1632	0.1617	0.1421	0.1437
3S	Cx	0.1789	0.1859	0.1809	0.1737
	Cy	0.1617	0.1595	0.1399	0.1421
3T	Cx	0.1859	0.1902	0.1854	0.1809
	Cy	0.1595	0.1581	0.1386	0.1399
4R	Cx	0.1744	0.1789	0.1841	0.1798
	Cy	0.1632	0.1617	0.1813	0.1827
4S	Cx	0.1789	0.1859	0.1909	0.1841
	Cy	0.1617	0.1595	0.1791	0.1813
4T	Cx	0.1859	0.1902	0.1950	0.1909
	Cy	0.1595	0.1581	0.1778	0.1791

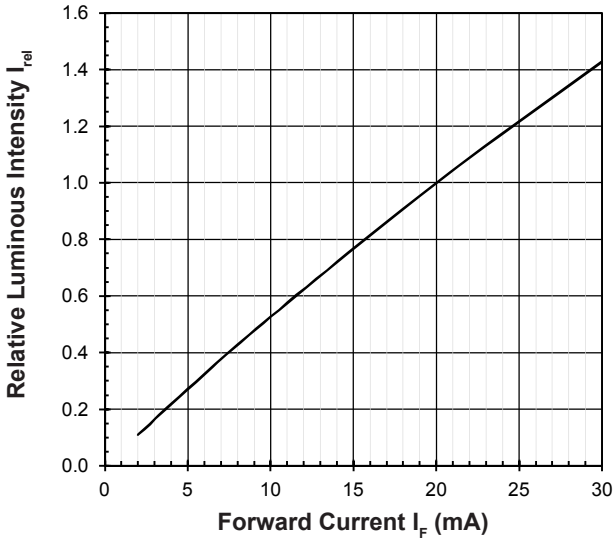
<b>Bin</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
5R	Cx	0.1798	0.1841	0.1893	0.1852
	Cy	0.1827	0.1813	0.2008	0.2021
5S	Cx	0.1841	0.1909	0.1958	0.1893
	Cy	0.1813	0.1791	0.1988	0.2008
5T	Cx	0.1909	0.1950	0.1998	0.1958
	Cy	0.1791	0.1778	0.1975	0.1988
6R	Cx	0.1852	0.1893	0.1945	0.1906
	Cy	0.2021	0.2008	0.2204	0.2216
6S	Cx	0.1893	0.1958	0.2007	0.1945
	Cy	0.2008	0.1988	0.2184	0.2204
6T	Cx	0.1958	0.1998	0.2046	0.2007
	Cy	0.1988	0.1975	0.2172	0.2184

Brightness Group	Luminous Intensity <small>Appx. 1.1</small> IV (mcd)
V2	900.0 ... 1125.0
W1	1125.0 ... 1400.0
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0
X2	2240.0 ... 2850.0



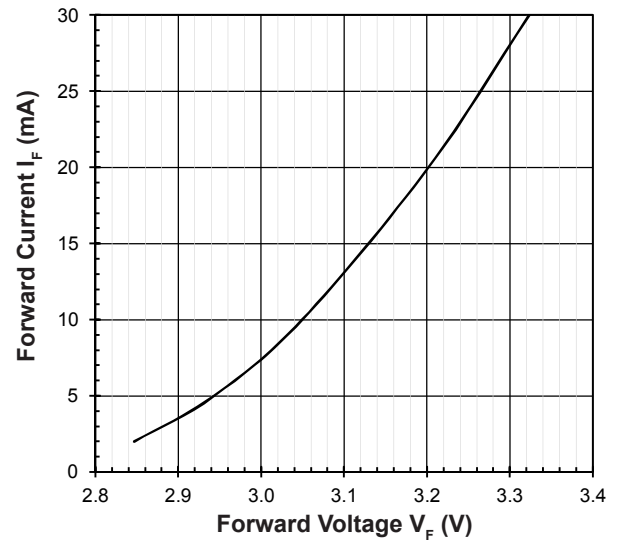
**Relative Luminous Intensity Vs Forward Current**

$I_v/I_v(20\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$



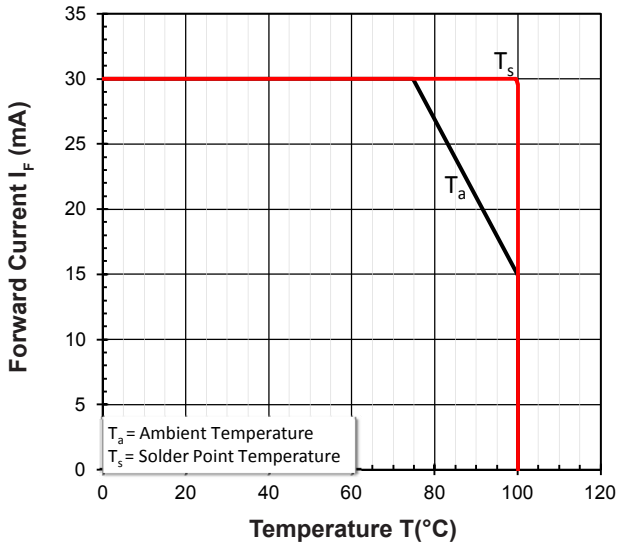
**Forward Current Vs Forward Voltage**

$I_F = f(V_F); T_j = 25^\circ\text{C}$



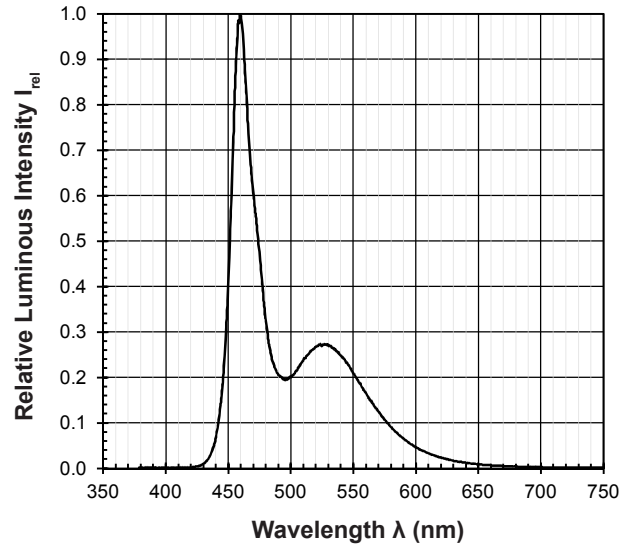
**Maximum Current Vs Temperature**

$I_F = f(T)$



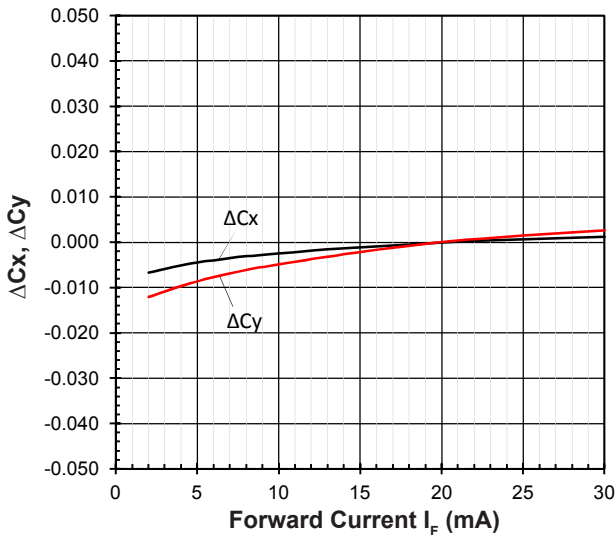
**Relative Spectral Emission**

$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 20\text{mA}$



**Chromaticity Coordinate Shift Vs Forward Current**

$\Delta Cx, \Delta Cy = f(I_F); T_j = 25^\circ\text{C}$

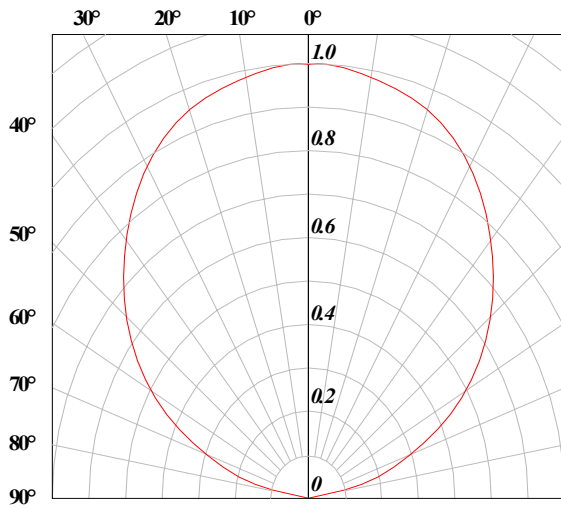


**Allowable Forward Current Vs Duty Ratio**

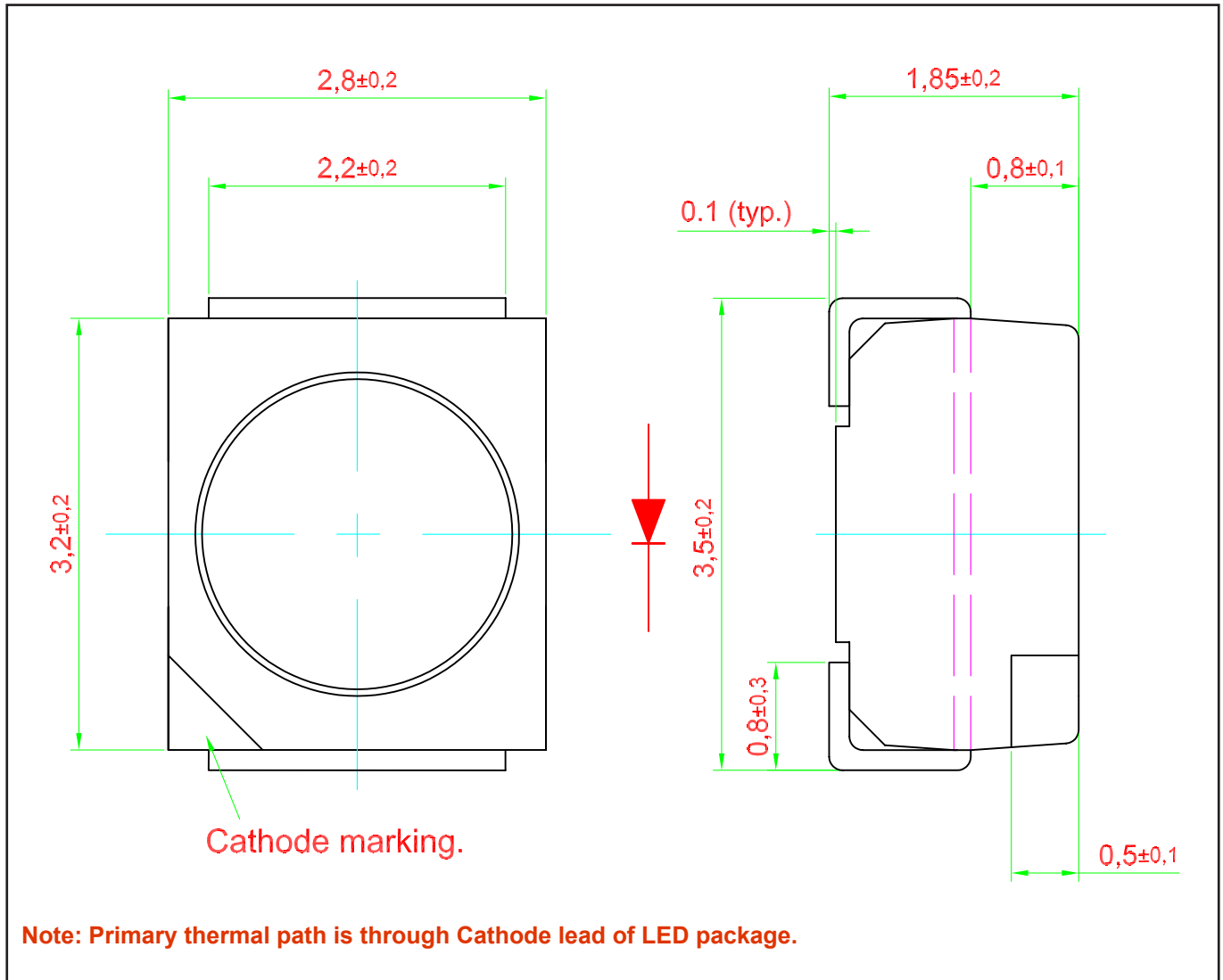
$(T_j = 25^\circ\text{C}; t_p \leq 10\mu\text{s})$



Radiation Pattern



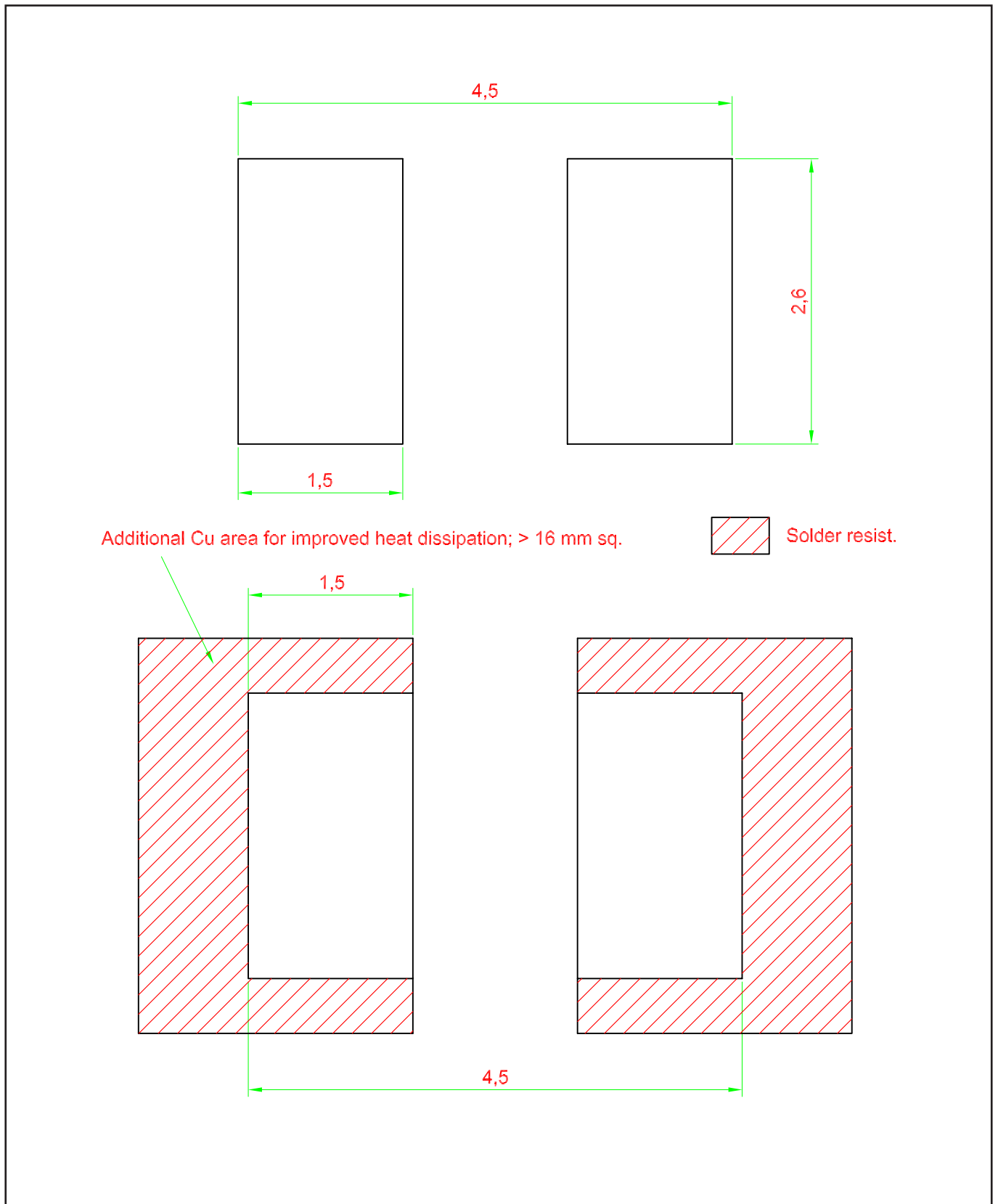
**DomiLED • InGaN : DDZB-LJG Package Outlines**



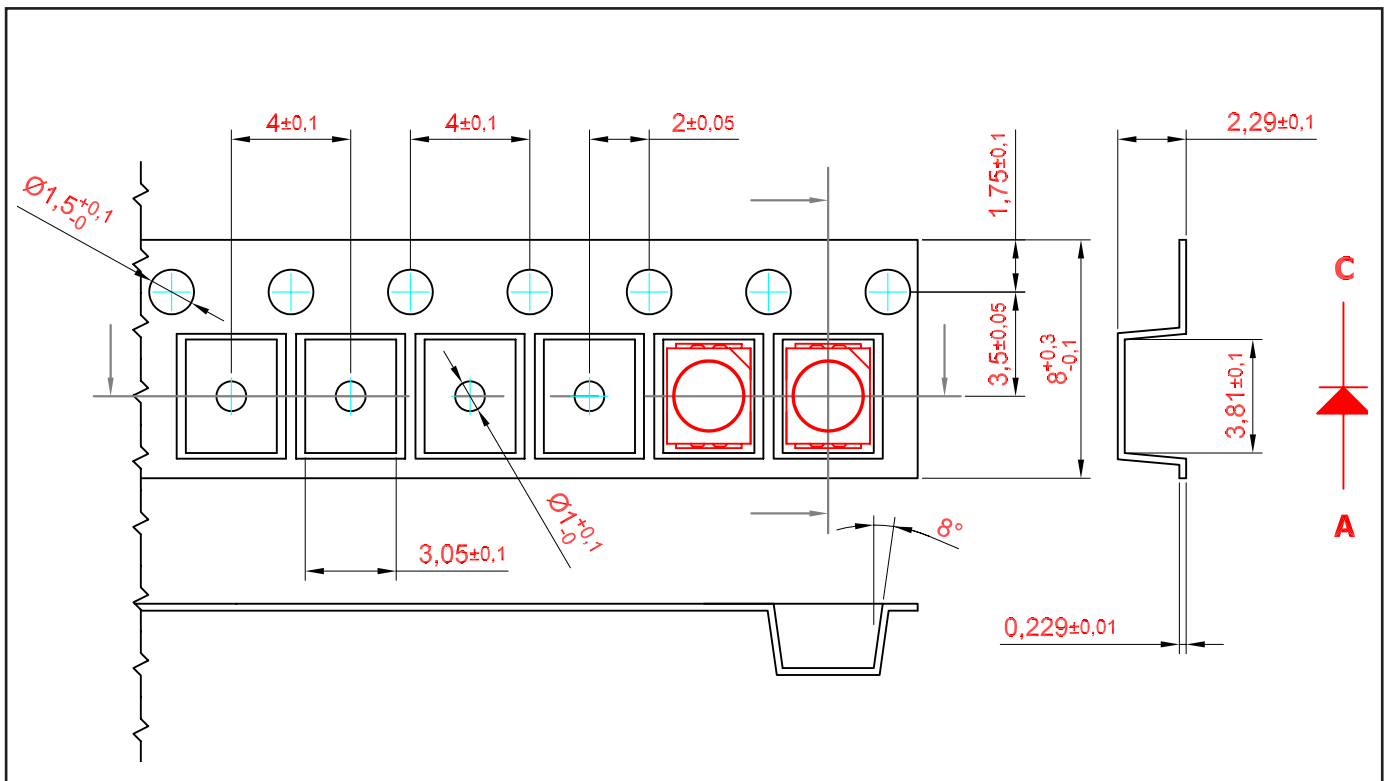
**Material**

Material	
Lead-frame	Cu Alloy With Ag Plating
Package	High Temperature Resistant Plastic, PPA
Encapsulant	Silicone
Soldering Leads	Sn-Sn Plating

### Recommended Solder Pad

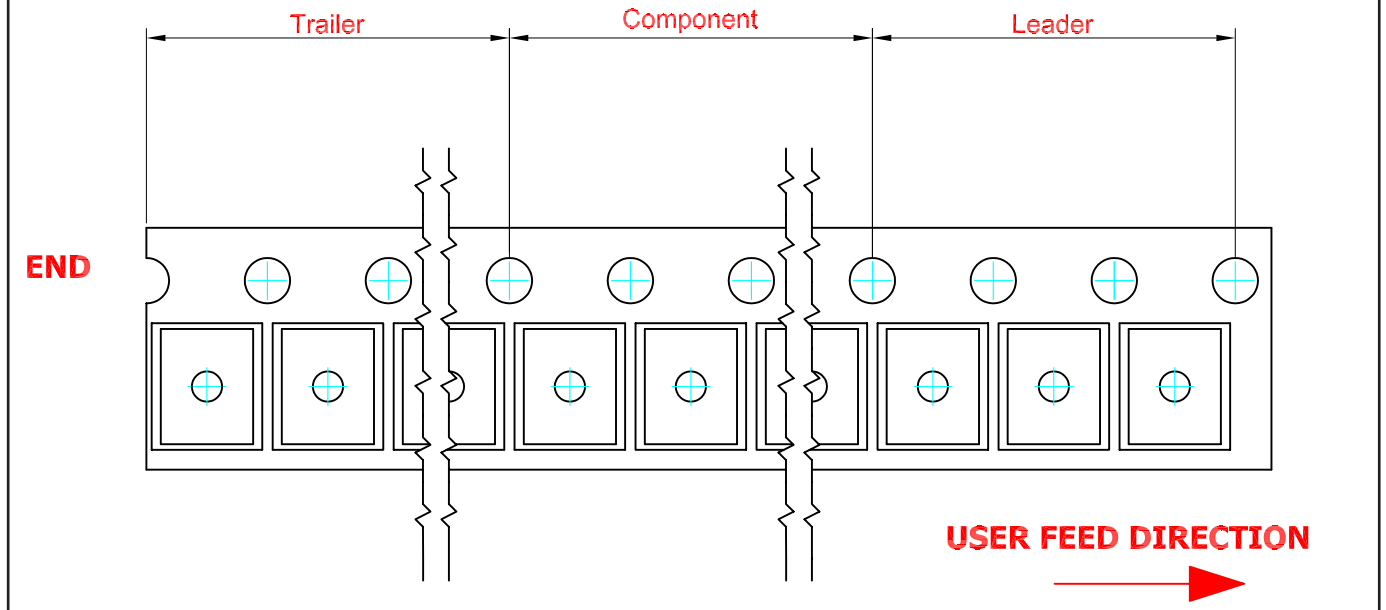


**Taping and orientation**

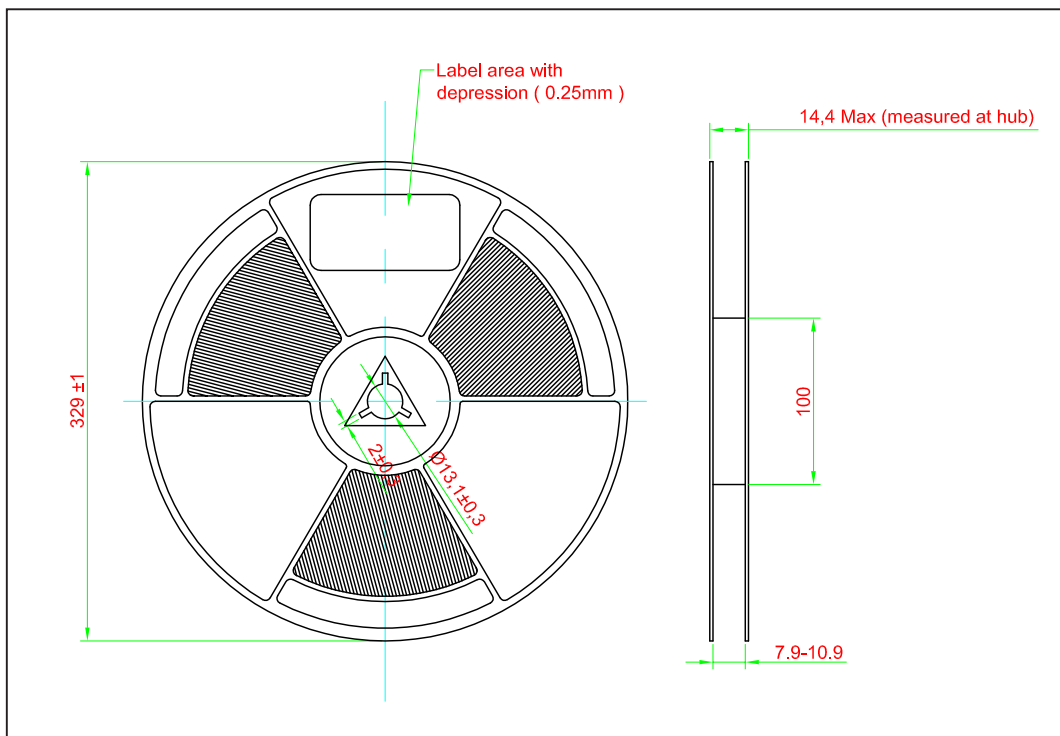
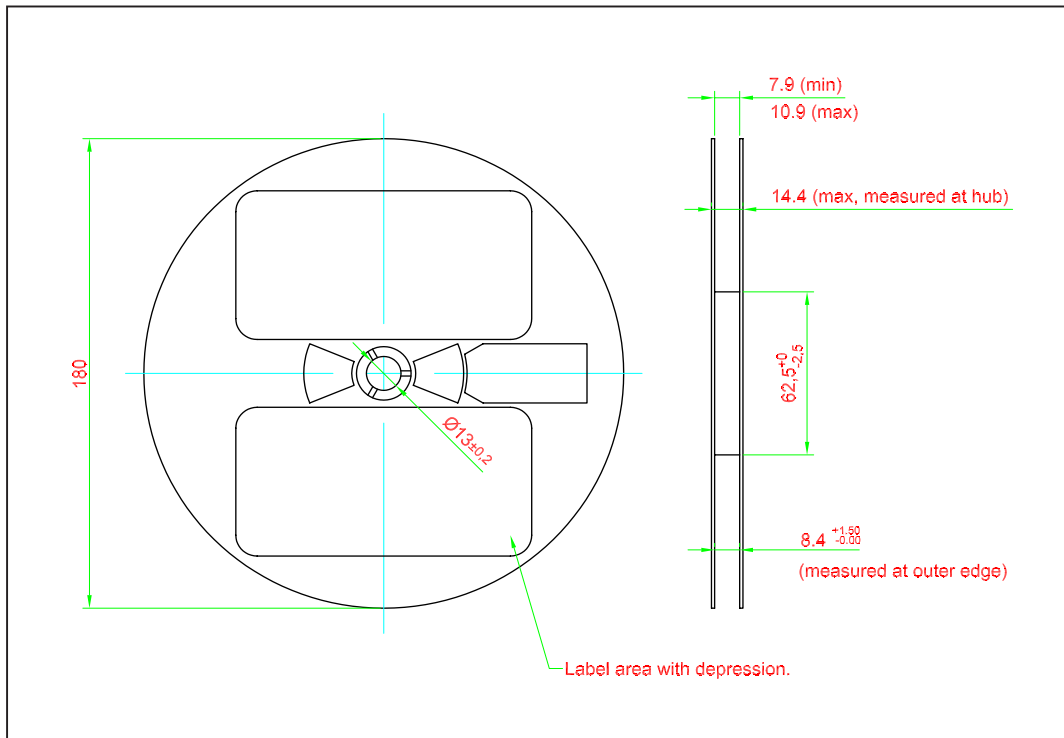


200 mm min. for  $\varnothing 180$  reel.  
 200 mm min. for  $\varnothing 330$  reel.

480 mm min. for  $\varnothing 180$  reel.  
 960 mm min. for  $\varnothing 330$  reel.

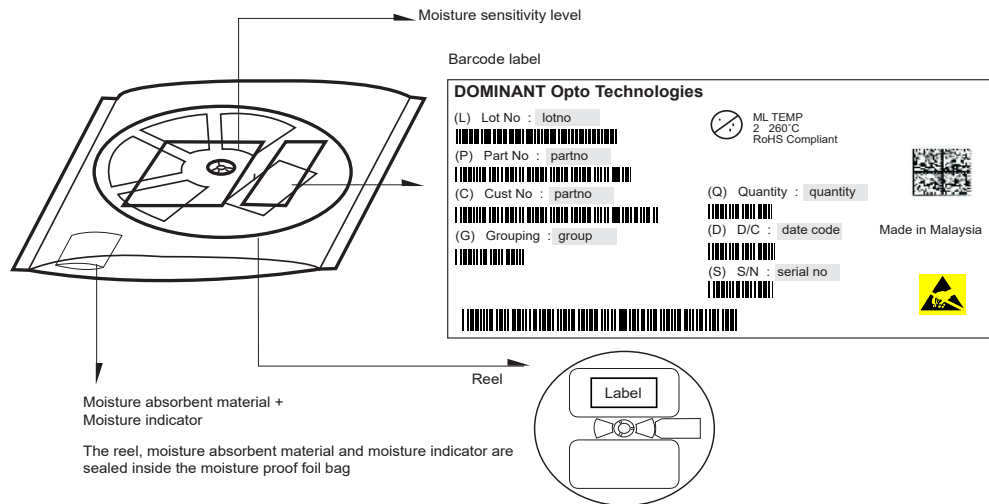


**Packaging Specification**

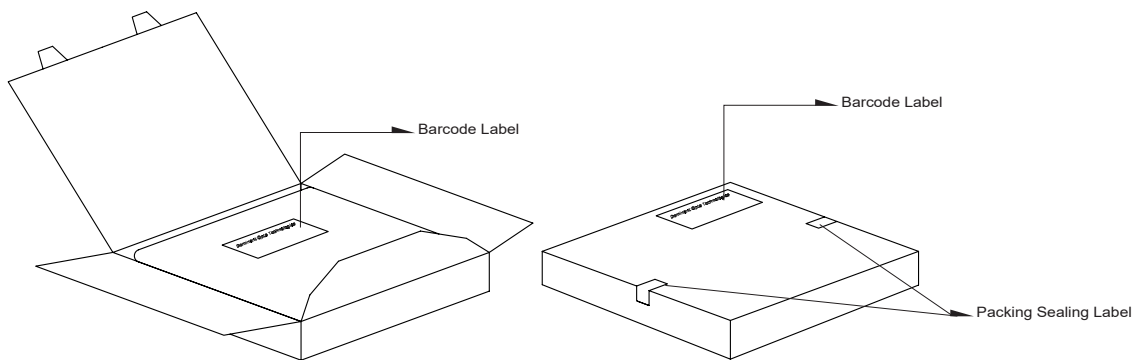


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DDZB-LJG-xxx-x
Optional Packing	329	8000	DDZB-LJG-xxx-x-8

**Packaging Specification**



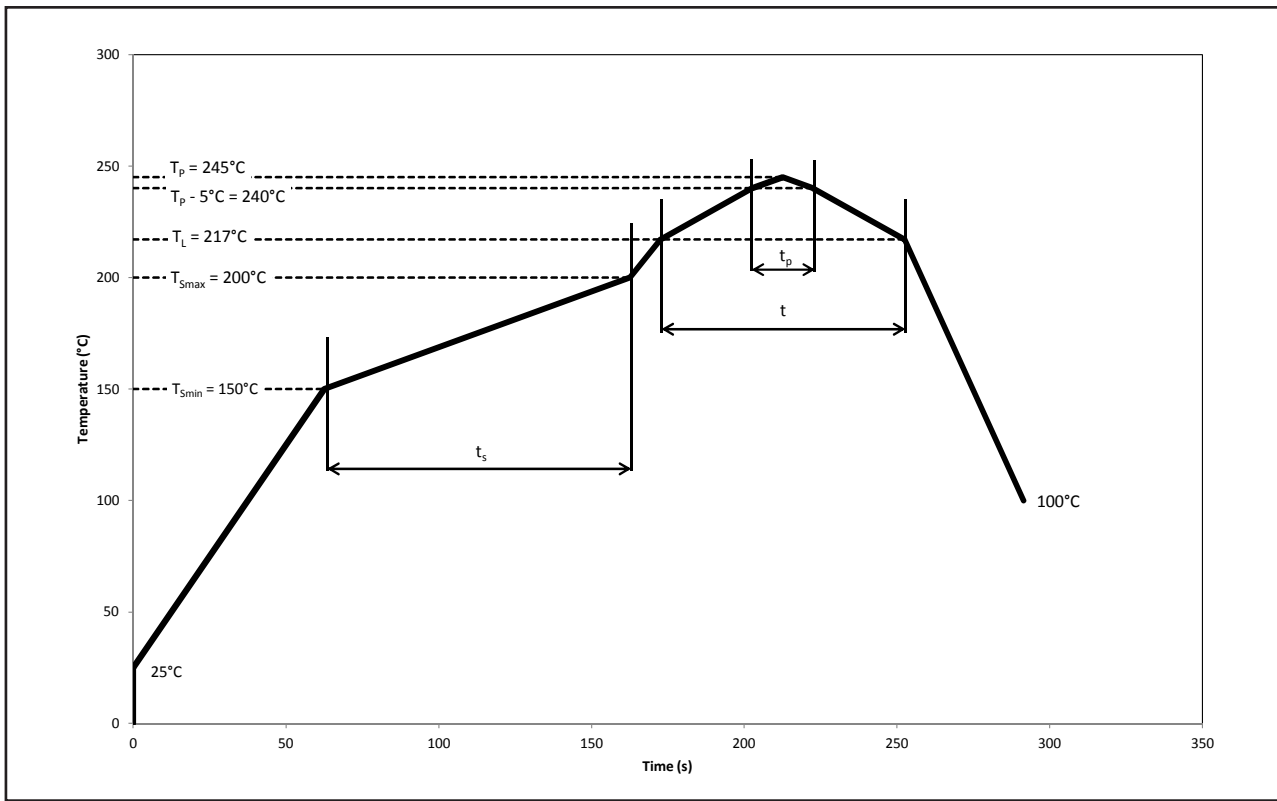
Quantity per bag (pcs)	Average 1pc DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10
8000	0.034	750 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16

## Recommended Pb-free Soldering Profile

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free Assembly			Unit
		Min.	Recommended	Max.	
Ramp-up rate to preheat 25°C to $T_{smin}$	-	-	2	3	°C/s
Time $t_s$ $T_{smin}$ to $T_{smax}$	$t_s$	60	100	120	s
Ramp-up rate to peak $T_L$ to $T_p$	-	-	2	3	°C/s
Liquidous temperature	$T_L$	-	217	-	°C
Time above liquidous temperature	$t$	60	80	150	s
Peak temperature	$T_p$	-	245	260	°C
Time within 5°C of the specified peak temperature $T_p - 5^\circ\text{C}$	$T_p$	10	20	30	s
Ramp-down rate $T_p$ to 100°C	-	-	3	6	°C/s
Time 25°C to $T_p$	-	-	-	480	s



## Appendix

### 1) **Brightness:**

- 1.1 Luminous intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (according to GUM with a coverage factor of  $k=3$ ).
- 1.2 Luminous flux is measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (according to GUM with a coverage factor of  $k=3$ ).
- 1.3 Radiant intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (according to GUM with a coverage factor of  $k=3$ ).
- 1.4 Radiant flux is measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (according to GUM with a coverage factor of  $k=3$ ).

### 2) **Color:**

- 2.1 Chromaticity coordinate groups are measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (accordingly to GUM with a coverage factor of  $k=3$ ).
- 2.2 Dominant wavelength is measured at current pulse 25 ms(typ) with an internal reproducibility of  $\pm 0.5\text{nm}$  and an expanded uncertainty of  $\pm 1\text{nm}$  (accordingly to GUM with a coverage factor of  $k=3$ ).

### 3) **Voltage:**

- 3.1 Forward Voltage,  $V_f$  is measured when a current pulse of 8 ms(typ) with an internal reproducibility of  $\pm 0.05\text{V}$  and an expanded uncertainty of  $\pm 0.1\text{V}$  (accordingly to GUM with a coverage factor of  $k=3$ ).

### 4) **Typical Values:**

- 4.1 At special conditions of LED manufacturing processes, typical data or calculated correlations of technical parameters only reflect the statistical figures. But not necessarily correspond to the actual parameters of each single product, which could differ from the typical data or calculated correlations or the typical characteristic line. These typical data may change whenever technical improvements happen.

### 5) **Tolerance of Measure**

- 5.1 Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimension are specified in mm.

### 6) **Reverse Voltage:**

- 6.1 Not designed for reverse operation. Continuous reverse voltage can cause migration and LED damage.

**Revision History**

Page	Subjects	Date of Modification
6	Add New Color Bin Structure	06 Mar 2014
8	Add Graph: Chromaticity Coordinate Shift Add Graph: Allowable Forward Current Vs Duty Ratio	04 Aug 2014
10	Typo error in material list	25 Aug 2014
1, 14	Add Features Update Packaging Specification	16 Oct 2015
1	Update Product Photo	29 Apr 2016
1, 2	Add Features Redefine Partno from DDZB-LJG-WX2-1 to DDZB-LJG-WX2-2J8L and DDZB-LJG-V2X1-2R6T	26 Jan 2017
8	Typo Error on Luminous Intensity Group	20 Mar 2017
2, 6, 9, 11	Update Partno from DDZB-LJG-V2X1-2R6T to DDZB-LJG-V2X1-1R6T Update Color Bin Structure Update Graph	20 Jul 2017
14, 15, 16, 17	Update Product Specification Update Recommended Pb-free Soldering Profile Update Appendix	15 Sep 2021

**NOTE**

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## About Us

DOMINANT Opto Technologies is a dynamic company that is amongst the world's leading automotive LED manufacturers. With an extensive industry experience and relentless pursuit of innovation, DOMINANT's state-of-art manufacturing and development capabilities have become a trusted and reliable brand across the globe. More information about DOMINANT Opto Technologies, an IATF 16949 and ISO 14001 certified company, can be found under <http://www.dominant-semi.com>.

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